The Excavating Engineer

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Up-to-date Coal Stripping in Hopkins County, Kentucky

Description of the Sunlight Mining Company's Strip Mine at Madisonville, Kentucky

THE Sunlight Mining Company, one of the largest and most up-to-date strip mines in Kentucky, lies three miles southeast of Madisonville on the Louisville & Nashville Railroad, 160 miles southwest of Louisville and 108 miles northwest of Nashville, Tennessee.

The property consists of 500 acres, 50 acres of which have already been stripped. It is favorably situated with respect to railroad transportation and connects directly with the Henderson division of the Louisville & Nashville Railroad.

The coal veins, consisting of two seams, run in a northeasterly direction on about a 1% grade. For this reason no trouble has been encountered with drainage, this being natural toward the north. Operations were started in August, 1920, and the property was carefully prospected beforehand so that each cut could be laid out in advance of the shovel.

The upper seam, which is No. 12 coal, averages 5 feet in thickness, and is separated from the lower seam by a solid stratum of limestone ranging in depth from three to five feet. The lower seam is known as No. 11 coal. This averages about 6 feet in thickness, both seams being of an excellent quality for steam and domestic purposes. The coal from this seam is picked by hand over the picking tables at the tipple.

The overburden consists of a mixture of clay and shale, the clay forming the greatest proportion of the material. It has been difficult to dig at times when saturated, but for the most part is comparatively easy to handle. The depth averages about 25 feet and runs up to 35 feet. However, because of the irregularity of the land formation in this section, fifty feet of overburden has in some places been encountered.

Stripping Operations

The stripping is being handled by a Bucyrus 225-B shovel with an 85-foot boom, and a 6-cubic-yard dipper. This shovel began work in August, 1920, and has been operating steadily ever since. This machine is operating 24 hours a day in three 8-hour shifts. Excellent results have been obtained with this shovel, being about 120,000 yards a month.

This shovel first cut in on the northwest side of the property in a short cut following the outcrop. Further cuts were made parallel to this in a gradually increasing curve, so that later on in the operations a complete circle was made around the property already stripped, until at the present time a haul of about ¼ mile to the tipple is necessary and a cut about ½ mile long and 100 feet wide is made.

Bucyrus 35-B Which Is Being Used for Loading Coal

No blasting has been necessary in removing the overburden, but explosives have been used to some extent on the coal. The powder employed for this purpose is 40% nitro-glycerine, and six drills have been kept in operation, three of which are Ingersoll-Rand, two Denvers and one Sullivan.

The 225-B is followed by two smaller shovels, a Marion 36 and a Bucyrus 35-B. These shovels work only one eight-hour shift a day. The coal is loaded into 5-ton Western Automatic Dump Cars of ten cars to a train. Four trains are operated and are hauled by three 18-ton Vulcan locomotives and one Davenport of the same size. In addition to this equipment, a standard gauge locomotive is used for switching the 50-ton standard gauge cars back and forth from the main line.

Loading Cars Under the Tipple

View of the Interior of the Tipple Showing the Picking Tables

Rock Crushing Plant where the Limestone Is Crushed into Standard Sizes for Road Building, Concreting, Etc.

Drilling Rock Ahead of the Small Shovels

Views Showing Tipple and Washing Plant at the Coal-Stripping Operations of the Sunlight Mining Company, Madisonville, Kentucky

UMI

Automatic Steam Dump

An automatic steam dump which has been ingeniously devised by two of the shovel engineers on the job has been applied to all of the shovels.

Automatic Steam Dump Invented by W. E. Trapnell and J. A. Easterwood, Operators on the Job

The inventors are W. E. Trapnell and J. A. Easterwood, both of whom are veterans in the excavating field.

The idea was conceived after an exhaustive investigation into this type of equipment which resulted in the practical formulation of a simple and inexpensive but effective dipper trip.

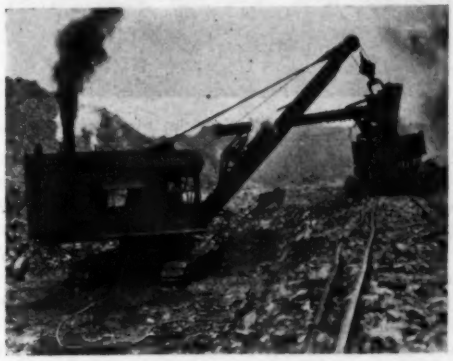
This device, which derives its power from steam, consists of a cylinder carried on the boom near the saddle block with a single piston at the end of which is a sheave. A wire rope extends from a foot lever in easy reach of the operator to the control lever of this cylinder. The trip rope passes from the latch lever under guide sheaves and over the sheave on the end of the piston and is dead ended at the rear end of one of the dipper sticks.

This arrangement leaves practically no slack to be taken up in either cable. A touch on the foot lever admits steam to the cylinder, thereby raising the piston, crimping the trip rope between the guide sheaves and dumping the dipper.

The Tipple

The Sunlight Coal Company has gone into the matter of preparation of their coal with scrupulous care and careful design. The tipple, with an operating capacity of 2,500 tons per day, is so constructed as to take care of the coal with utmost convenience and efficiency.

The coal, as it comes from the pit, is dumped into a hopper and run over shaker screens where the 3 x 6-inch egg and 6-inch lump is sorted out



Bucyrus 35-B Loading Rock into Western Dump Cars

and loaded directly into cars. The 3-inch coal and smaller is conveyed from here by means of a belt conveyor to the washing plant where it is washed and elevated to the revolving screens. Here it is rescreened into 3 x 2-inch egg, 2 x 1¼-

Another View of the 225-B

inch nut, 1¼ x 3-inch and ¾-inch down. Each size passes under the spray, and is loaded into 50-ton standard gauge railroad cars ready for shipment. All breakage and slack is flumed back to the settling tank or sump.

J. West Powell, Madisonville, Kentucky, who is Secretary and Treasurer of the Company

An up-to-date machine shop is maintained where a forge and blast are ready for use in connection with any repair work that is to be done.

In addition, a rock crushing plant with a capacity of 1000 per day is operated by an affiliated company known as the Sunlight Crushed Stone Company. The limestone, which lies between the two seams, is blasted, taken out by the small shovels, and sent to the rock crushing plant where it is crushed into sizes for road building, concreting, etc.

The Shovel Crew on the Bucyrus 35-B—Left to Right: Ernest Montgomery and Curtis Farley, Pitmen; Winston Angel, Fireman and Floyd Barron, Operator

In looking over the operations of the Sunlight Coal Company, one senses the spirit that is behind its success. Wherever it is possible, the most up-to-date and efficient operating methods have been put to use.

The officers of the Company are: J. B. Ramesey, Madisonville, Kentucky, President; J. B. Boddie, Madisonville, Kentucky, General Manager; J. West Powell, Madisonville, Kentucky, Secretary and Treasurer; B. B. Holloway, Madisonville, Kentucky, Assistant Secretary and Treasurer.

J. H. Angel is the Superintendent on the job. W. E. Trapnell, Burton Forley and Frank Mitchell are operating the three shifts of the 225-B; Floyd Barrow and J. A. Easterwood the 35-B and Sidney Milne the Marion 37.

This Goes King Tut One Better

Talking of extraordinary excavation, one need not go to Egypt and disturb the Pharaohs in their tombs for unique finds. Just go to Toronto.

In digging the cellar for the new 8-story warehouse for Cassidy, Limited, the Ontario Construction Company's steam shovel working for E. G. Cape & Company, general contractors, struck a veritable museum. The first strike was some hundreds, if not thousands, of umbrella frames. When these had been finally pried out and disentangled from the dipper, the shovel struck a reef of solid silk. This was brought out a bale at a time till quite a good start for a drygoods store was heaped on the sidewalk.

Investigation discovered that the bales were only scorched outside and perfectly good inside; evidently they were buried after some conflagration. By this time sightseers were arriving in force (not Cook tourists) and a silk auction was run as a subcontract.

Meantime the shovel runner had taken on all the enthusiasm of an Egyptologist with the result that he soon uncovered a perfectly good steam boiler. This raised a question as to whether or not he should try to lift the boiler, and if in so doing, would he be interfering with the Steam Cranemen's Union. The more immediate question was, could the shovel lift it anyway? Everything was disposed of to everyone's satisfaction by a second-hand dealer in the crowd bidding $10 for the boiler "as and where it lay."

There will probably be an arbitration suit necessary to classify the charges for extras in excavation of this kind.

Our friend Short, timekeeper on the Yardville job, says that he went in a saloon the other night for a nip of liquor and when the bar-tender gave it to him he handed him a whiskbroom with it. "What the deuce is the broom for?" said Short. The bartender said, "To brush yourself off with when you get up!" Short says that he then sold the drink back to the saloon and went up to the next corner for a strawberry sundae.

—*Juniata News.*

Mrs. Willis: "What is this stuff that you are going to give my husband?" The Doctor: "Anesthetic. After he takes it he won't know anything." Mrs. Willis: "Come, doctor, he doesn't need that at all."

The Illinois Central Grade Revision and Curve Elimination at Central City, Kentucky

Description of a Million-Yard Job Being Handled by the States Corporation, Chicago, for the Illinois Central Railroad at Central City, Kentucky

A NOTABLE piece of relocation and grade revision which ranks with the heaviest railroad excavation of the year is well under way at Central City, Kentucky.

Central City is a junction of the Louisville & Nashville and Illinois Central Railroads about 135 miles from Louisville, the way the crow flies, and about twenty-eight miles from Madisonville in Hopkins County.

The growth of Kentucky's coal production has been in the past few years tremendous. Open-cut mining is coming into its own, and a big feature for this particular section of the state is expected in the next few years.

The railroads have realized what this growth means. Better facilities for the transportation of coal must be provided. As a result, the western part of Kentucky is going through a bonanza period of railroad construction.

Some of this work is worthy of note. The Illinois Central Railroad Company recently completed about 20 miles of new construction on its cut-off between Central City and Dawson, Kentucky, which is an extension into Madisonville. This work involved 3½ miles of relocation and revision of grade on the old Kentucky Midland, 19½ miles of new line through Madisonville, and four miles of track laid on an old grade between Dawson and Providence.

The piece of work which interests us particularly at this time is a 4½-mile strip of curve elimination and grade revision, just north of Central City, being handled by the States Corporation of Chicago for the Illinois Central Railroad.

The reason for this bit of work is obvious. Beginning with the intersection of the Louisville & Nashville and Illinois Central Railroad station at Central City, there is a 2% grade for about three miles, in addition to a curve of about a mile and a half, the north end of which forms a veritable "hog-back," which has often made it necessary to break long freights into two trains in order to get over the grade.

The grade revision and curve elimination at Central City consists of reducing the present 1½% grade to level and cutting through on a direct level from a point about one mile south of Central City to the station of Brownie, three and a half miles north. This, together with the elimination of the present curve, heretofore mentioned, and the relocation of the main line, affects an economy of trackage amounting to 1.2 miles.

Bucyrus 103-C 4½-cubic-yard railroad-type shovel. This machine is now equipped with railroad-type caterpillars.

View Showing Section of Temporary Tracks with Part of New Grade to the Right

Taken from the Present Location of the Tracks, Showing Trestle where New Tracks Will Be Laid

Showing Section of Work with Central City in Background

Another View Showing Temporary Tracks to New Cut, with Keystone Drills in the Background

General Views of the Operations

In addition to this, extensive new freight yards will be built on a site just north of the junction, which will be used as storage yards later on. The Illinois Central will also erect a concrete trestle over the Louisville & Nashville Railroad at their present intersection, the approaches to which are already well under way.

Shovel Operation

The States Corporation have two railroad-type shovels in operation, a Bucyrus 103-C equipped with a 4½-cubic-yard dipper and a Bucyrus 88-C equipped with a 3½-cubic-yard dipper. Both will be equipped with railroad-type caterpillars later on.

Between Dipperfuls on the 103-C—Left to Right: N. Peterson, Fireman; Vane Miller, Operator; Sam Kelly, Craneman.

The excavation may be considered as being divided into four main cuts. Beginning from the south end, the first consists of 20,000 yards and the second about 60,000 yards, the former being about 1300 and the latter about 1500 feet in length. Separating the two cuts is a fill 2500 feet long which will require about 100,000 yards.

On the north of the second cut is a fill 5,000 feet in length into which will go about 250,000 yards of material. It is in this fill that the new trestle, previously mentioned, will be built, over the Louisville & Nashville Railroad, together with the construction of a new passenger station. The average depth of the fill is 15 feet with a maximum of 25 feet.

North of this fill is the biggest cut, involving 700,000 yards of excavation, 3,000 feet long and 57 feet at its greatest depth. At the time of writing this article, the Bucyrus 103-C is operating in this cut.

North of this part of the work is a fill into which the greater portion of the material will be deposited. In this fill, which will be 45 feet at its maximum depth, a trestle 5,300 feet long is completed.

At the end of this fill is the fourth cut, consisting of about 60,000 yards. The Bucyrus 88-C is working in this cut, the material from which

Taken on the Job—Left to Right: Leo Murphy, Yardmaster; William Partington, Walking Boss; A. R. Terwilleger, Superintendent: G. P. Fleetwood, Civil Engineer; C. A. Richards, Assistant Engineer.

is being hauled to a fill, where 50,000 yards will be required. Here another trestle, 2,000 feet long, to be used similarly to the one previously mentioned, is under construction.

Equipment

The excavation up to this time has been found somewhat difficult. When sandstone has been

Four well drills are being used on the work, two of which are Cyclone and two Keystone. The above view shows two Keystone drills in operation.

encountered, four well drills were used to go ahead of the shovels, two of which are Keystone and two Cyclone. 40% gelatine dynamite has been used for blasting.

The material is loaded into thirty 12-yard Automatic Western Dump Cars and are hauled

by five 50-ton four-wheeled switchers. A Jordan spreader is used for leveling the material in the fills.

The States Corporation have been very successful in the short period of their existence. Another big contract which they have recently undertaken is a million-yard grade-revision job, which comprises part of the Chicago Terminal and Lake Front Development program, being carried out by the Illinois Central Railroad in conjunction with the city of Chicago, a description of which was given in our June issue. Mr. A. E. Dennis is President of the company and P. E. Connor, Vice-president.

Bucyrus 88-C railroad-type shovel equipped with a 3½-cubic-yard dipper. This machine is now equipped with railroad-type caterpillars.

G. P. Fleetwood is chief engineer of the work, while A. R. Terwilleger is superintendent. E. E. Miller is office manager.

F. H. Robertson is the resident engineer for the Illinois Central while F. T. Phipps is his assistant.

One Has to Get Up Early in the Morning to Catch A. R. Terwilleger who is Superintendent on the Job

Vane Miller is operating the day shift on the 103-C, Thomas Pete is firing and Sam Kelly is craning; while Geo. McNamara is operating, Roy Walkins is firing and G. A. Wilcoxon is craning the shovel on the night shift.

Virgil Ballinger is operating, Scottie Ray is firing and John McKinley is craning the 88-C on the day shift; while Ed. Hancock is operating and Frank McKinley is firing on the night shift.

We are indebted to A. R. Terwilleger for this information.

Levee Construction with Dragline Excavator in Arkansas

Description of Reeve H. Hutchinson's million and a half yard contract on Farelly Lake Levee District on the Arkansas River. How a 145-ton dragline was moved across a 200-foot bayou, thirty feet deep, on a specially constructed trestle.

REEVE H. HUTCHINSON, drainage contractor, has recently been engaged in an interesting piece of dragline work on the Farelly Lake Levee District near Gillett, Ark.

This District was organized for the purpose of reclaiming swamp lands and the better protection of improved lands in Arkansas and Jefferson Counties on the north bank of the Arkansas River, one of the Mississippi's big tributaries.

The levee construction was divided roughly into two parts, namely: Enlargement work and new levee construction. The enlargement work was in the upper or western part of the District and called for 500,000 cubic yards of excavation. On this part of the work the elevation was higher than further down to the east. In both cases, however, the material had to be taken from the river side of the fill, and where there was not a sufficient amount of material to accomplish this the old levee had to be moved back. The material was a sandy loam and a 15 per cent shrinkage was required. The equipment used was a Bucyrus Class-24 dragline, equipped with an eighty-five-foot boom and a four-cubic-yard bucket. The fill was made in one move through, except as mentioned later on.

New Levee Construction

The lower end of the District was swampy land. Here a new levee was constructed through virgin timber. The right-of-way was three hundred feet wide. All stumps were blasted and grubbed from the levee bed and the ground was plowed. A muck ditch was then constructed along the center line of the levee, 4 feet deep by 4 feet wide at the bottom. This levee was 16 feet to 20 feet in height with a 3 to 1 slope on both sides with a two-foot crown and a 32-foot

Completed Levee in Jefferson County Near the Flood Gate

Building the New Levee through a Cypress Swamp

The ground was grubbed ahead of the dragline. The right-of-way was 300 feet wide.

In some parts of the work the material was very soft black muck which required an allowance of 20% for shrinkage.

Construction of Levee for Farelly Lake Levee District, Arkansas

The Start

On the Way, Showing Dragline in Operation

Looking Across Trestle

Safely Across

Bringing a Class-24 Bucyrus Dragline Across a 300-foot Bayou on a Specially Built Trestle

berm. It was sodded with tufts of Bermuda grass, placed at three-foot centers.

The material, especially in the cypress brakes, was a very sticky black earth, which required an allowance of 20 per cent for shrinkage. On this work it was necessary to equip the dragline with a one-hundred-foot-boom instead of the eighty-five-foot-boom which was used on the enlargement work. Most of this work was also accomplished by the dragline in one trip through, but in some of the very low and wet places the dragline was obliged to make three cuts on three trips through; furthermore, it was necessary to use a four-inch centrifugal pump in the borrow pits in order to keep the water low enough to enable the contractor to get sufficient material to make the fill.

Flood Gates

The entire district has natural drainage. The main outlet channels are two streams or bayous, known as Big Bayou Meto and Little Bayou Meto. At the mouth of these bayous, where they intersect the levee, the flood gates are being constructed. Big Bayou Meto flood gate is at the lower end of the District near Gillett, Arkansas, and the Little Bayou Meto at the upper end at Reydel, Arkansas.

Mr. Hutchinson had the contract for the excavation for the flood gate at Big Bayou Meto. This amounted to 65,000 cubic yards and one excavation measured 278 feet long by 263 feet wide and 31½ feet deep. A berm of fifty feet was required on all sides of the excavation and the material excavated was used to make a continuous embankment around the pit. Water was encountered at a depth of 20½ feet and remained at this level, the pit filling to this elevation as fast as the dirt was removed, but no great difficulty was encountered in making the excavation to grade with the dragline.

Moving Dragline Across the 300-Foot Bayou

In order to make the excavation on the flood gate, it was necessary to move the dragline across a bayou, from Arkansas County to Jefferson County. In order to do this a bridge was built across the bayou about three quarters of a mile

Excavating for the Big Bayou Meto Flood Gate near Gillett, Arkansas. This was 278 feet long, 263 feet wide and 31½ feet deep with a 50-foot berm calling for 65,000 cubic yards of excavation. The water in the pit was 11 feet deep, but did not prevent excavating to grade.

from the mouth thereof, and about 1500 feet above the flood gate site. At this point, the bayou is about 300 feet wide and 30 feet deep. The bridge was a double-pile trestle which was in reality two railroad bridges made up of five piles at each bent. The bents were twelve feet apart and capped with 12-inch by 12-inch oak timbers 12 feet long, upon which were laid 12-inch by 12-inch by 12-feet oak stringers four inches apart, making two runways 24 feet apart. The two lines of trestle were then tied together at each bent with 4 x 12 oak timbers. The photographs accompanying this article illustrate the bridge and the method of bringing the dragline across very clearly. Needless to say this was accomplished without any difficulty but the settlement of some of the piles under the load demonstrated the necessity for a liberal factor of safety in figuring the required penetration of the piling. It might be added that this bridge is being put to further use as one side of it is being used for a wagon road while the other side will later be used for a standard gauge railroad which will run from Gillett to the site of the flood gate, over which material and machinery for the flood gates will be transported.

Roads

Sometimes at night I dream of roads;
Not kindly roads, nor flower-fringed roads,
  But roads of drear despair;
Of roads in flood, of roads of mud,
  The roads of "over there."

One-way roads—sad gray roads,
Gutted, rutted, ruined roads,
Shell-shocked roads, shot-scarred roads,
The war-time roads of France.

Remember, boy, that mud-hole road,
That shattered, battered, Hun-marred road,
  That ran from Cumiere,
And led us down to Forges town,
  The town that—wasn't there!

That one-way road—that sad gray road,
That gutted, rutted, ruined road,
That shell-shocked road, that shot-scarred road,
That war-time road of France.

Though north by east ran that mad road,
That eastward swinging Hun-strafed road,
  It led by buddie—West;
While I went on,—and on,—and on,—
  And left him there to rest.

On a one-way road, on a sad gray road,
On a gutted, rutted, ruined road,
On a shell-shocked road, on a shot-scarred road,
On a war-time road in France.

By A. H. S. in Chicago Tribune.

The three views shown herewith represent action o
on in and around Los Angeles. At the le Chas. C
road contract of E. Schilling's at Beverly Hi At the
taken on the same job. Above is Jewett Buster's
Glendale, California.

Bucyrus 20-B Shovel Owned by the Hopkins County Construction Company, Shown in Operation on the Illinois Central Grade Revision Near Madisonville, Kentucky

R. M. Netherland Company of Pittsburgh i
excavation for a new storehouse for the Pe
size of the excavation is 68 feet by 1500
done by one of this company's 20-B Bu
which we illustrate herewith. The ha
ing themselves to the eye, became
"Hossfly" (Sam) Hawkins, pitm
fireman; Nick Milas, oiler; and
dricks, operator, all as Mr
says has been on a

...tion of the construction work that is going ... Chas. G. Willis & Sons' Bucyrus 20-B on a ... At the right is E. Schilling's Bucyrus 20-B ...ster's Bucyrus 20-B widening a road near

...burgh is engaged at present on the ... the Pennsylvania Railroad. The ...ately 1500 feet. The work is being ...20-B Bucyrus ¾-yard shovels, ... The handsome gents expos- ...ethe camera are, left to right, ..., pitman; Jack Seaver, ...man and Tyson Hen- ... Mr. Netherland ...'em all."

Bucyrus Class-9½ gasoline dragline owned by the Imperial Irrigation District in operation in the Imperial Valley, California. There are seven of these machines in operation on this work and they are at the present time engaged in the excavation of drainage ditches, of which about 250 miles are to be constructed. The Chief Engineer on the operations is Mr. Ray S. Carberry.

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The Business Outlook

The recent slowing down of business during May, June and July has not appeared to have had any marked effect upon the prosperity of excavating contractors in general. Yet there has been great uncertainty as to the extent of the reaction, especially in view of the pessimistic attitude of the stock market.

But our readers should remember that, although the stock market reflects conditions which are influential upon general business, yet the rise and fall of stocks seldom clearly indicates just what the immediate business trend is to be. One of the most potent influences upon stocks is the state of the money market. Thus the rise last winter was probably chiefly due to the growing ease in money, and the recent reaction is probably due to the very conservative action of the banks in increasing business loans by curtailing loans on stock rather than by borrowing from the Reserve Banks and thus causing inflation. Also stocks were about due for a reaction.

At present the stock market is looking for light rather than shedding light. The fact that bonds have been weak, along with stocks, is very important as indicating that the present market conditions are no proof of impending poor business; for, when business is about to go into a depression, bonds should *advance,* as stocks fall.

Furthermore, there is no such dangerous spread between bank loans and deposits as marked the overexpansion of 1920.

So we may state that there are now no indications that 1920 is about to be repeated. On the contrary, the probabilities are that we are about to enter a twelve months' period of extremely level business, which should facilitate completing the business readjustment necessitated by the slump of 1921.

A Magnificent Engineering Feat

Ten years ago Ohio experienced its most disastrous flood when the Miami River and its tributaries overflowed the valley, taking toll of 400 lives and destroying one hundred million dollars' worth of property.

Facing this colossal calamity the citizens of Dayton rose to the occasion and determined that such disaster never should recur. Today that determination stands crystallized in monumental accomplishment. The work is completed. It represents the world's greatest engineering achievement in any age. Today the flood-prevention system extends up and down the valley for a distance of more than eighty miles, and no man will say that the cost of the improvement, $32,000,000, was a price too large to pay for enduring security.

The men of Dayton were men of vision. Deeds, Patterson, Cox, Arthur Morgan and many, many more refused to be appalled by the apparently insurmountable difficulties which faced them. Rich lands, villages, railroads — all these were compelled to give way before this imperial physical project. And today the mammoth dams, retaining walls, new channels and deeper streams constitute a work such as human mechanical ingenuity and genius never before accomplished in the experience of the human race.

Seven towns and cities and one of the richest valleys in the world are now made forever secure from any recurrence of the flood horror of 1913. Truly, the people of Dayton and the Miami Valley have reason for pride in this tremendous accomplishment. It suggests possibilities of what in time may be done in the Ohio, Mississippi and other river valleys where the water demons annually work havoc. All honor to the men whose faith, courage and genius have made possible this great achievement in the field of modern engineering!

— *Cincinnati Inquirer.*

American Mining Congress Convention

Elaborate plans are being laid for the 26th Annual Convention and Exposition of the American Mining Congress, which will be held in Milwaukee, September 24th to 29th.

The program lists an unusually large number of important sessions, which will be devoted to such topics as industrial co-operation as a means to secure industrial peace, selective immigration, taxation, standardization of mine equipment, conservation, gold and silver problems, and a conference of coal operators.

Over 150 representative exhibits of the most modern types of mine equipment and machinery will be displayed in the Auditorium, where all sessions of the convention will be held.

A new feature of this convention, and one which should attract to Milwaukee a larger number of operating men than ever before, will be Open Forum conferences, which will be based on questions asked by operating men relative to daily problems which come up in connection with the use of different equipment. The conferences will be arranged on a schedule basis, a program of which will be published in our next number. These conferences will be informal and should offer an opportunity for illuminating discussions on a varied number of practical mining problems by experts from all over the country.

This convention promises to be the most interesting ever held by this Congress.

Our Front Cover Illustration

On our front cover page is published a view of the Hopkins County Construction Company's Bucyrus 20-B shovel at work on the Illinois Central Grade Revision near Madisonville, Kentucky. This is only a small portion of the great amount of improvement that the Illinois Central Railroad has undertaken throughout that district. Another large contract which has demanded the attention of a great many in the engineering field is described in this issue on page 263. The Chicago Terminal Improvement and Lake Front Development being carried on by the same railroad in conjunction with the City of Chicago ranks with the heaviest railroad excavation of the year.

· FIELD NOTES ·

Points on Truck Selection

By P. L. Sniffin

One of the most pertinent bits of advice on the use of motor trucks in the excavating engineer's business is, "Don't hamper your hauling with hasty selections." This should be a watchphrase with every contractor who wants to get the most of profit from motor truck equipment.

The excavating engineer should first of all recognize the fact that in no other field of business are motor trucks called upon to render such strenuous service as in this business. To install inferior equipment, therefore, is to seriously handicap profitable results. In loading with steam shovels, for instance, a one-ton mass of dirt and rock is often dropped from a height of several feet upon the truck. In discharging the load, the truck is usually run forward and then backed sharply against an obstruction several times. Such procedure produces a terrific shock upon the body, springs and chassis, but usually it is unavoidable since speed in loading and unloading is the determining factor of profit on such work. An additional feature of the service is the fact that poor roadway conditions and sharp inclines are encountered in reaching loading and unloading points.

In buying a motor truck, it should always be remembered that the heart of the truck is the motor. In maintaining a motor truck fully 80 per cent of the cost of repairs may be traced to the motor. Consequently, the motor is the first determining standard of judgment. "First cost" is far from being the most important cost in the end. The successful truck purchase is one that renders efficient service at the lowest cost per unit mile *over a period of years*. It is very unwise to base a truck's value on its first year's service. Many trucks that make surprising records in their first year fall down completely after two or three years' continuous use.

The operator should avoid the chance of having an "orphan" vehicle on hand. Out of 411 truck manufacturers in business during a period of seven years, more than 225 failed some time during that period. A long established resourceful manufacturer will continue to be ready to render service and supply parts when required, and will insure for his product a comparatively high re-sale value.

Every contractor's specific requirements for motor truck use are different and there is a wide choice of types, sizes and body designs to select from. It may be said, however, that where trucks are called upon to do excavation work and to handle bulk materials, such as sand and gravel, a tremendous saving can be gained by the use of a dump body mounted upon a truck of proper size. In the ordinary dump body, the body itself is hinged at a point near the rear end and the load is discharged by raising the body by means of a hoist, generally hydraulic. Usually the hoist and tailgate are operated by levers from the driver's seat. Dump bodies, are, of course, more expensive than other types, yet this additional cost will ordinarily be justified by quicker unloading at the truck's destination.

It is well to consider all the various types of vehicles in installing a motor truck. There are three principal types of motor trucks, commonly called the shaft-drive, the chain drive and the double reduction. Each has particular advantages for certain purposes and no installation should be made without giving full attention to

each. Factors of dependability, power, hill-climbing ability, longevity and operating economy enter into such a consideration. An additional point on truck types is that of the wheelbase. Trucks are obtainable with various sizes of wheelbase. Often a short wheelbase will add to loading and unloading efficiency by permitting quick and easy manipulation of the truck in narrow and congested places.

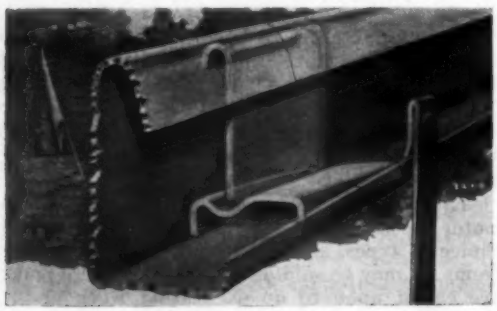
Many operators make the mistake of buying a truck of inadequate size, resulting in the very expensive practice of overloading. A small percentage of overload with a high quality vehicle is often justified but too many concerns insist on learning through bitter experience that a large percentage of high hauling costs can be traced to heavy repair bills and breakdowns, and these in turn to the practice of overloading.

DEVICES YOU OUGHT TO KNOW ABOUT

The Carr Road Form

We publish herewith a photograph of the Carr Road Form, which has just been placed on the market by The Lakewood Engineering Co. of Cleveland, Ohio, and which was exhibited at the Chicago Road Show.

The photograph shows the cross section of the form which is made of $\frac{3}{16}$-inch metal. The locking arrangement consists of two simple wedges and insures accurate and rigid connection of sections.



The Carr Road Form

The sections of form are made in 12-foot lengths, which is 20% longer than has been customary for road forms and decreases the number of joints to be made and the sections to be handled in a given distance.

One of the most important features of the form is the Line Point Top Surface, which is secured by the rounded top. No concrete or stones can lodge here to get under the wheels of the finishing machine or subgrader to cause them to ride high.

The form is practically self-cleaning. Edging is made easier because of the uniform top and smooth joints which result from the rigid connection between sections secured by the wedge members.

Flat stakes having a penetration of 18 inches and which can be driven anywhere along the base of the form are another point of superiority. The shape of the stakes gives them maximum resistance against displacement.

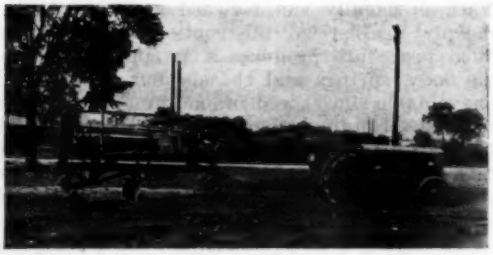
The base is 5 inches wide and furnishes ample bearing to support the forms when carrying mechanical finishing and subgrading machines.

These forms were used on several jobs last season in order to thoroughly try them out before placing them on the market. These jobs proved that the advantages of the form are of real practical value.

Further information concerning the Carr Road Form may be obtained from the above company.

The World's First Light Steam Tractor

A new type of tractor for road building and general construction work has appeared on the market in shape of the Bryan Light Steam Tractor, the product of Bryan Harvester Company, Inc., of Peru, Indiana. Initial production of this new machine was started several months ago, and



The Bryan Steam Tractor

deliveries to distributors and dealers have already been made in a number of states.

This new tractor weighs about the same as any other tractor of 15-30 size. It employs a patented water-tube boiler called a generator, and according to the manufacturers will work for

upward of ten hours on a single tank of water which is 60 gallons.

Several years have been required for the perfection of this tractor and tests that have been made cover several Western and Middle Western states. The output of the two factories of Bryan Harvester Company is said to be contracted for in advance for about two years.

The Bryan Harvester Company also plans a steam truck to employ the same power plant as is now used in the tractor. This truck will probably make an appearance on the market during the coming winter.

Ruggles Road Builder

The Ruggles Road Builder, shown in the accompanying illustration, was built to supply a truck adapted especially to the requirements of contractors.

The manufacturers call attention to these outstanding features: adequate motive power, truck balance, short wheelbase, short turning radius, pneumatic tires and special low gear ratio, providing unusually high tractive effect. It is particularly designed for use with a standard 21-E concrete mixer; is equipped with a dump body to carry two batches of material. The truck can be purchased with underbody hydraulic hoist and dump body or automatic gravity and dump body.

The Ruggles Road Builder

For contractors who handle dry aggregate, the dump body is divided by a center swinging partition to handle 2, 4 or 5-bag batches. For mixed concrete, the center swinging partition is removed. For contractors handling gravel and earth, a 2-cubic-yard dump body is supplied, with double-acting tail gate and spreading attachment. Further information may be obtained by writing Ruggles Motor Truck Co., Saginaw, Michigan.

SHOTS FROM THE FIRING LINE

Central States Notes

BY M. J. WOODHULL AND MARK GAYLORD

The Dawson Daylight Coal Co. are building an unusually attractive little town at their strip mine near Dawson Springs, Kentucky.

The houses for the employees are four and five-room modern bungalows. There is a clubhouse and office building and large garage in addition to the homes.

This group of buildings is located on the slope of a small hill that adds to the attractiveness of the town and insures splendid drainage in wet weather.

They are now working their Bucyrus 35-B building railroad grade and getting things in shape for the Bucyrus 320-B and Bucyrus 50-B which they have ordered.

The Hopkins County Construction Co. have taken an unusually heavy piece of highway work in Livingston County, Kentucky. The most of the excavation is rock and in some places the cuts are quite deep. They wanted to be sure and get this done on time so have ordered a Bucyrus 50-B to do the work with. (See center page spread.)

The A. Guthrie Co. of St. Paul have steam shovels and hauling outfits scattered over about twenty-five miles of the new Illinois Central line and everybody is working hard.

Mr. A. G. Boa, Resident Engineer for the Illinois Central at Madisonville, Kentucky, has moved his family there. His three young sons take turns about going out and helping Dad make the contractors toe the mark.

J. A. O'Neal is operating a Class-24 Bucyrus for the Walsh Construction Company, cutting down the famous Magnet Hill near Mattoon, Illinois.

Jim Smith is at the levers on the opposite shift. Henry Jones and Roy Black are making the fog.

New York and Vicinity

BY T. A. BURNS

If anyone feels slighted, annoyed, peeved, aggrieved, or agitated because of anything said or left unsaid in this column, and contemplates visiting our offices because thereof, we wish to inform such parties that the most acceptable time for an interview of this character is about 12 noon any day, as we are located in the center of a maze of good restaurants, and possessed of a healthy appetite and expense account.

Current Lament

A wondrous bunch of junk are you,
Though your frame is cracked and your boom askew.
Your A-frame bent and loose at its toes,
And buckled and sprung, goodness knows.

But if you had a reach of two foot more,
And a higher lift by two foot four,
A relocation of your swinging gear,
And power feed pump to prevent this smear.

Yes, if all these points and three dozen more
You had added to your batting score,
Provided, of course, your courage rang true,
You too might work on Fifth Avenue.

We asked the fireman where the shovel runner was and he said "Home with poison Ivy." That is what comes of discussing our marital relations with our subordinates.

Conversation with a steam shovel salesman who had a shot of Scopolamin.

"Have you the best three-quarter-yard shovel on the market?

"I don't know."

"Have you the highest reach?"

"No."

"Longest dump radius?"

"No."

"Have you more shovels of this size in operation than any of your competitors?"

"I don't know, but I say so."

"Where did you get your shovel education?"

"The boss 'told' me."

"Is your boss the best steam shovel salesman in New York?"

"Beyond the question of a doubt."

"How do you know this?"

"He was in the fabricating business before coming with our company and he knows the line."

W. J. McArdle took the pictures shown in connection with the Stamford Dam in a recent issue. Dave Hertzler says McArdle got his snapshot practice on strawrides around through the country about New Canaan.

The Veddas of Ceylon are said to never laugh or lie. We do not know where the shovel operator in Philadelphia comes from who says he was paid for 1000 yards a day for thirty consecutive days. But although he did not laugh, we are of the opinion that he is no Veddasian.

It is hard to keep up with the times in our town, but we understand that "Jerry-Built" houses are produced through "Snowball" wages.

"For Heaven's sake, let us keep men of imagination."—Maurice de Wolffe, in the Paris Middi. Well, we hope the boss didn't read French.

Mr. Dooly No Less

"Pon me sowel, Hennessey, you cant keap the Irish off 5th Avenue. They're bound to get there in one kind of a blue uniform er another.

"There is Jim Mangin, for instance, afther eleven years of aspirations and other wire pullin thryin to git on the cops, he displaces Lugi de Veto and lands with his six foot 3 of grit, granite and grandeur walking the bridge of C. D. Beckwiths new twinty B as proud as iver Captain H. Cunningham, H. for Harold save the mark, I say as proud as Captain Cunningham iver felt takin the George Washington out of Liverpool Harbor with a head wind blowing his remarks inland, distributin' thim among the inhabitants for whom they were intended; as proud as Cunningham is Mangin, tearing up 5th Avenue to permit C. D. to lay down another good boulevard, if ever at a loss to himself.

"Mangin came from Carbondale, Hennessey, where the Kennedys, the well-known subway contractors, came from and by reason of this fact is well known to Charlie Bennett the Hightalian excavatin' engineer from Brooklyn that has 40 trucks and a fleet of Agles. Or maybe its Aries as you claim, anyway it's them steam shovels that's built in Arie Pennsylvania.

"Well, when Bennett heard what happened to Lugi in his best Rutland Road paravalance or polly view or whatever you call it, anyway what he said was 'Mannaggia La Merica and the rest of the Irish' which is rite and fittin sinse Charlie helps elect most of thim to the Booard of Alderman and is entitled to his little joke."

Shovel Runner to Owner of Dilapidated Craft

I am for you and think you're for me,
But we will have to increase our production or see
The Graders taking thy business from thee.

"Our flatterers are our most dangerous enemies."
Our repose is undisturbed.

We know a Marion salesman named Hoppie
Never known to indulge in the Poppy.
The broth of a lad of whom much might be said,
But we have a full quota of copy.

Northwestern States Notes

BY A. R. HANCE, PORTLAND, OREGON

On June 12th, the Washington State Highway Commission opened the following bids at Olympia:

The general construction work on the National Park Highway, for the Nesika Bridge Approaches in Lewis County, was awarded to Norman McKinnen, whose bid was $16,795.

The Hans Peterson Construction Co. of Seattle, Washington, was awarded the contract for the excavation and overhauling of the Sunset Highway, between Fall City and Snoqualmie, in King County, Washington. The bid was $63,857.25.

The surfacing, excavation and overhauling of the Navy Yard Highway, between Union and Holyoke Creek in Mason County, Washington, was awarded to the John Offeson Company, whose bid was $77,990.40.

On June 26th, the Washington State Highway Commission at Olympia let several contracts for clearing, grading, draining and surfacing of small sections of road as follows:

The clearing, grading, draining and surfacing with gravel of about 1.58 miles of the Olympic Highway, in Mason County, was awarded to the Harrison Bros. Co. of Tacoma, Washington. Their bid was $21,742.55.

The Lewis County Commissioners opened bids for grading, draining and clearing right-of-way on the National Park Highway for a distance of a little over two miles from Salkum, where last year's improvement stopped. The contract was awarded to Geo. A. Bandoret of Bryn Mawr, Washington, whose bid was $39,299.00.

On June 28th, bids were opened at Glacier for the construction of from 8 to 10 miles of transmountain road in Glacier National Park. There were three bids received, of which Laux & Gardner, Kalispell, Montana, were the low bidders. Their bid was $79,600; alternate, $82,927.

The Department of the Interior, National Park Service, opened bids at Longview, Washington, on July 2nd for work on the Nisqually River Suspension Bridge. There were four bids received, but the totals were slightly in excess of the money available and bids will be called for again about the last of this month on a bridge of slightly reduced span length.

The Union Pacific has called for bids on that section of railroad which will put Boise on the main line, and copies of the specifications, profiles and maps have been mailed to contractors, who will submit their bids before July 10, it was announced. This means that construction work may commence within three weeks. There are two contracts to be let, one for the construction of the

grade from Orchard to Perkins and the other for the construction of the grade from Nampa to Sonna, 2.6 miles, so the train no longer will have to back up in leaving Nampa for Boise. Construction of the grade between Perkins and Orchard involves the digging of a 900-foot tunnel about 12 miles from Boise.

Pacific Coast News

BY P. H. BIRCKHEAD

The Pacific Gas and Electric Company has recently purchased a Bucyrus 70-ton shovel No. 895 and is starting it in operation on Pit River No. 2 Power Plant Project in Shasta County. The shovel operations will be under the general direction of O. W. Peterson with John Anderson actively in charge. Anderson is a veteran at the business, having had charge of shovel operations on the Los Angeles Aqueduct several years ago. In direct charge of No. 895 as engineer will be C. E. Sanders, also veteran operator.

Actual construction work on the Fremont Wier and Dam on the Sacramento River near the junction with the Feather River has begun by the Utah Construction Co. which has the contract for the work.

This flood control work will cost $1,000,000 and 700 men are to be employed as rapidly as the work progresses to permit their being utilized. A seven-mile spur track from Elkhorn on the Sacramento Northern Railroad is to be built to the job for handling materials and supplies.

The wier, which will be 7000 feet long, is designed to protect a large area of lowland in this section which in years past has been flooded by spring freshets. The wier will divert this water through the Yolo by-pass.

A small army of subcontractors already is on the job or preparing to move in and begin work. The concrete work has been awarded to Walter Samuels.

Contract has been awarded to P. J. Hopper, Susanville, by the Red Rock Irrigation District, for the construction of storage dams for the District in Lassen County. Three reservoirs will be constructed: the Red Rock Creek Dam, Cold Springs Dam, and Buckhorn Dam, each to be earth and rock-fill with concrete core. Plans for works for the District will be started shortly by Consulting Engineers Cope-Rand & Means, 369 Pine Street, San Francisco, and will probably be completed by August. The Red Rock Irrigation District will comprise about 23,515 acres of land.

Bonds have been voted by the City of Los Angeles as follows: $7,500,000 for new site and City Hall Building; $15,000,000 for harbor improvements; $2,000,000 for building viaducts from Macy Street to Ninth Street, spanning the river and railroad tracks, the County and the Railroad Companies to pay the balance of cost which is estimated at about $10,000,000; $500,000 for a new Library Building; $1,500,000 for new playgrounds.

The California State Highway Commission, 515 Forum Building, Sacramento, has ordered completion of plans, surveys, etc., for construction of last unit of Skyline Boulevard, to be 20 miles in length. Route over the Castle Rock Ridge from Saratoga Summit to a juncture with the Los Gatos Highway at Woodwardia, Santa Cruz County, has been selected.

Contract has been awarded by the Santa Fe Railway Co., Mr. R. B. Ball, Chief Engineer, Kerckhoff Building, Los Angeles, to the Sharp & Fellows Contracting Co., Central Building, Los Angeles, at $175,000 for three-mile spur track into the Torrance Oil fields.

The Consolidated Copper Mines Co., which is again producing, has been shipping high-grade direct smelting ore at the rate of 200 tons daily, the product going to the McGill Smelter of the Nevada Consolidated.

The Nevada Consolidated Copper Co. is now treating over 7000 tons daily and is further enlarging its concentrator and installing a reverberatory furnace with a capacity of between 800 and 900 tons daily, which will supplement the two furnaces now in use. Fifteen ball mills are in operation in the rebuilt concentrator, and fifteen more are to be installed.

The Santa Cruz Portland Cement Company is doubling the capacity of its plant at Davenport, California. The plant, which is the largest on the Pacific Coast, will be in full operation in a short time.

The new plant will have a capacity of 10,000 barrels of cement daily, the increased output being necessary to meet constantly growing demands for materials used in the great construction activity now under way in California.

During the last year the company furnished cement for the Hetch Hetchy and Don Pedro Dams. Nearly 750,000 barrels of cement were used in the latter project.

The Hart Construction Company has been awarded contract for two miles of road in West Sacramento on bid of $88,000.

A federal fund of $200,000 has been given for proposed construction of road from Woodland up Beaver Creek in the Wasatch National Forest, Utah. Total of $136,060 will be spent on Forest Road in Utah during 1923.

Southern States News

BY C. N. BALLENTINE AND W. W. WHORLEY

Road contracts involving over $1,000,000 were awarded at Montgomery on June 26th.

Thirty-two miles in St. Clair County will form part of the new highway from Birmingham to Gadsden. Section A was awarded to Phillips & Company of Birmingham. Section B was awarded to Donahoo & Company of Tuscaloosa.

The Marengo County Project, which consists of twenty-four miles of gravel road, was awarded W. K. Saulsberry of Birmingham.

Fountain & Myers of Hattiesburg, Mississippi, were low bidders on twelve miles of gravel road in Crenshaw County.

The Clark County Project, six miles long from Thomasville to the Wilcox County line, is of the gravel type with concrete bridges and was awarded to Stanley & Singer of La Fayette, Alabama.

Pinellas County, Florida, voted by a heavy majority in favor of a bond issue amounting to $2,863,000 for use in improving and building its road system.

W. A. (Arthur) Taylor reports things moving smoothly with his new Bucyrus 20-B on the job near Siluria, Alabama. According to Mr. Taylor he can move several times as much material with the same number of teams as before.

Thad McAlister, who has been running a Class-175 Bucyrus Dragline for Swift & Co., in Florida, dropped in to see us recently. He can be reached at 1219 East 19th Street, Jacksonville, Florida.

W. J. Dowdle is operating a Marion 37 for the Phoenix Portland Cement Co. at Birmingham.

It is the plan of the Florida East Coast Railway to build the connection from its main line at Little River, westerly through Hialeah and up the west bank of the Miami Canal and the eastern shore of Lake Okeechobee to Okeechobee City, which is the southern terminal of the Okeechobee Branch.

This will give a continuous line from the East Coast at Little River by way of Lake Okeechobee to New Smyrna, some two hundred fifty miles north of Miami.

F. G. Bradshaw. who has been operating for Dwight P. Robinson, was a recent visitor at this office.

Contracts for eight projects involving $1,110,000 were awarded in Nashville, Tennessee, on June 22nd. This was the first large awarding of contracts under the new State Highway Commissioner, Mr. J. G. Creveling of Nashville, Tennessee.

Contract for the construction of Federal Aid Project No. 69, consisting of 14.7 miles of cement concrete pavement between Jackson and Haywood County line in Madison County, was awarded to Harry McD. Hays, Worthington, Indiana, for the approximate amount of $484,000. Bridges on this project amounting to approximately $105,000 were also awarded to Mr. Hays.

Federal Aid Project No. 91 and a portion of No. 16, including the approach fill of the Cumberland River bridge near Clarksville, Tennessee, were awarded to Moore Construction Co., of Nashville, Tennessee, for approximately $130,000.

Twenty-one miles of road construction between Monteagle and Altamont, Tennessee, were awarded to the Brown Contracting Company, Chattanooga, Tennessee, for approximately $199,000.

Thirteen miles of road in Owenton County was awarded to Mr. Boyd Williams, Murfreesboro, for approximately $35,000.

St. Louis Items

BY A. B. KOENIG

J. F. "Dutch" Iftner in charge of the Walsh Construction Co. work at Mattoon, Illinois, reports their work getting along nicely and plenty of labor which they are importing from the south.

W. H. Wignall writes us from State Center, Iowa, that his 12-team outfit will be idle in a few days. He wants any kind of grading.

Mulvill Bros. have three steam-shovel outfits, and Gaines Bros., Myers & Son, J. Fortney and T. Hughes team outfits at work on their double-track job on the Chicago & Alton Railroad between Shipman and Plainview, Illinois.

Cameron, Joyce & Co., Keokuk, Iowa, have 70,000 yards of shovel work suitable for standard gauge or small cars at Gary, Indiana, to sublet.

C. Barton & Sons report their 15-team outfit idle at Sorento, Illinois.

E. S. Kelly is finishing his road work at Lutesville, Missouri. He wants a job in the west suitable for a 23-team outfit.

Pete Shugart was awarded a contract for grading a sidetrack for the Illinois Central Railroad near Lenzburg, Illinois. He is moving a machine outfit on it.

Z. C. Mitchell of Smith & Mitchell Construction Co. reports good progress with their work on the Illinois Central Railroad near Paxton, Illinois.

Tom Walsh and Dan Terry of the Walsh Construction Co. were with us a day. They did not say what they were after, but whenever you see these two together it means something out of the ordinary. We will probably announce it in the next issue.

Walter LeMaster will complete his road work at Hillview, Illinois, in a couple of weeks. He wants another road or levee job.

Contractors when in want of work or labor for their outfits write or wire Koenig Labor Agency, 612 Walnut Street, St. Louis, Missouri, or 501 Delaware Street, Kansas City, Missouri.

Canada

Vancouver Notes

BY J. C. MOON

Building permits for the first six months of the year are well in excess of those for the corresponding period of 1922, an inspection of the civic building department records shows. From January to June the total value of permits this year was $2,230,114, while for the same months last year the total was $2,013,431.

J. Driscoll, who has been operating a shovel for several years in this District, has gone to Newfoundland for the Northern Construction Co.

The Nickson Construction Company have secured a contract from the K. V. Railway for bridge filling on the Penticton Division. They are using a Bucyrus 85-C with J. Norris at the lever end.

The contract with the Northern Construction Co. for the building of a bridge to connect the North Shore of Burrard Inlet with Vancouver has been ratified by a vote of the rate payers of the interested municipalities. The bridge will accommodate foot and vehicle traffic and also a single track railway. The cost will be approximately $1,500,000.

The Provincial Government, Department of Public Works, has awarded O. M. Watson, Alice Arm, the general contract for a section of the Hyder Road costing about $37,000. Materials have not yet been secured by the general contractor.

Work of widening and deepening the entrance to Vancouver harbor is under way. The Narrows will be widened by 500 feet as well as deepened, and for this purpose the government dredge, Mastodon, will be used. The work will require all summer to complete.

The construction program of the Canadian National Railways provides for a total expenditure of over $28,000,000 and ranges from Vancouver Island in the far West to Guysboro, Nova Scotia, in the East. Out of the total nearly $18,000,000 will be expended in the Prairie Provinces, over $3,000,000 in British Columbia, nearly $5,000,000 in the Maritime Provinces, about $2,000,000 in Ontario, and less than $500,000 in Quebec.

The huge concrete dam being erected in connection with the Sumas Reclamation Scheme, at Sumas Lake, British Columbia, is nearing completion and the pumps and gates are all in place. The pumping will hardly be commenced before the fall, as the concrete must be given time to cure.

Toronto and Vicinity

BY M. DE WIND AND C. E. ENGLAND

The Federal Construction Co., Niagara Falls, Ontario, are making good progress on their contract for the abut-

ments of the new Michigan Central Railroad bridge at this point. Work is under the supervision of Mr. McKenzie.

E. O. Leahey & Co., of Montrose, Ontario, are very active on their dredging operations for the Hydro-Electric Power Commission on the Chippewa Creek. Mr. E. O. Leahey spends the major portion of his time on this work.

The annual meeting of the Engineer's Institute of Canada was held on May 29th at the Refectory, Queen Victoria, Niagara Falls Park. Members and guests to the number of seventy-two sat down to dinner.

Reports were read, the work for the coming year was outlined, and officers were duly elected.

The entertainment provided by the Welland Ship Canal, Instrumental Trio and the "Hydraulocutioners" in their one-shift comedy "The Ditchers" was much appreciated. Their programme follows:

The management of the E. I. C. Theatre have pleasure in presenting to their numerous and long-suffering patrons, a

Gala Performance

of the celebrated play

"THE DITCHERS"

An Hydraulicing Farce in one shift by the famous Cymric Dramatist Teadw Ard

Scene — Somewhere near a Canal.

TIME — Mean Lundy's Lane Time, corrected for sidereal, curvature, refraction and Ontario Temperance Association.

"The Gang"

Theo. Dolight — An instrument-man (Alleged)

T. Angent Links — A rodman (but should be in chains)

Buck-hard — One of the main gazabos.

Bucyrus Blast — A dirt remover.

Lighting by the Philip Juice Company of Niagara Falls.

Costumes by Les Consumers' Bag Cie of Stamford.

Scenery (such as it is) by Bond, Bond, Bond and Cie of Chippawa and Paris.

Stage Manager — Jagor Donwite.

NOTICE — The management wish to state that much of the language in this play is symbolic and must not be taken literally, and that the characters are entirely imaginary.

Any of the audience intending to take action for libel are requested to communicate with our solicitors. No personal interviews can be entertained.

The audience are requested to refrain from throwing missiles at the actors during the course of the play. They are doing their best.

The management would consider it a compliment if the audience remained until the end of the play.

GOD SAVE THE KING.

G. L. Campbell, of Thorold, Ontario, is working a number of teams with fresnos and wheelers, in addition to his shovel, which he is operating on Section 4, Welland Ship Canal.

We had the pleasure of meeting Mr. Joe Porter of St. Catherines, Ontario, recently on Section 2, Welland Ship Canal. With his shovels, mule teams, and his assortment of drag scrapers, fresnos, and Chicago Tongue Scrapers, he is making the dirt fly on his job there.

Sir Wm. Arrol & Co., Ltd., the famous Scotch contracting firm who built the Forth Bridge and many other important works of international note, are working on the Ship Canal in Thorold. They have a train of 20 Western 12-yard cars hauling rock at the present time.

Bates & Rogers Construction Co., of Port Weller, Ontario, are away to a good start this season on their concrete cribs on Lake Ontario in connection with the new Welland Ship Canal. This work is under the supervision of Mr. D. E. Mather.

The Sinclair Construction Co. of Toronto, Ontario, have been awarded the contract by the Provincial Government for the construction of the new railroad line from Swastika to the Larder Lake District in Northern Ontario. It is reported that upwards of a thousand men are already on the job.

Morrow & Beatty of Petersborough, Ontario, are constructing the dam for the Quinze Power Co., which will furnish electric power to the Porcupine Mining District over about 80 miles of high-tension line. As we go to press over five hundred men are reported to be employed on the job, and this will be increased as the work develops.

The Lumsden Engineering & Transport Co. of Toronto, are pushing ahead with their work on the Welland Canal near St. Catherines. They have just placed on it a new Standard Western Elevating Grader and a bunch of dump wagons to speed up the job.

Messrs. Johnston & Clements of Listowel are engaged on several township draining contracts in this vicinity.

Winnipeg and Vicinity

BY F. X. AMOSS

The J. A. Tremblay Company secured the contract for the rebuilding of "Provencher" School, St. Boniface, which was destroyed by fire in January, 1923. The contract price was just under $116,000 and Mr. Tremblay expects to finish the job early in January, 1924.

Mr. John McCallum, Superintendent of Steam Shovels and Equipment, after thirty-seven years' service with the Canadian Pacific Railway, has been placed on the Retired List by the Company.

The Company's officers, recognizing the long service and high standard of efficiency developed by Mr. McCallum in his Department, paid a most glowing tribute on the cessation of his responsibilities.

As Mr. McCallum has been in close touch with the development of excavating machinery for the past forty years, we predict that his opinion will continue to have great weight with the Executive of the railroad.

Mr. P. R. Morris succeeds Mr. McCallum as Superintendent.

The Dominion Senate killed the bill providing for the construction of branch lines of Canadian National Railway over a period of three years. This will undoubtedly work a hardship, especially on the people in the West, as many of these lines are already partly constructed and the need for their completion is very urgent.

Plans have been prepared for the provision of a water supply for Regina, Saskatchewan, work to be started this summer. It is planned to construct a reservoir about a mile and a half long, with an area of approximately 180 acres, to hold four hundred million gallons.

Early completion of the Winnipeg-Emerson Highway now seems probable. The Manitoba Government has guaranteed two-thirds of the cost of the work and the balance to be borne by the municipalities affected. It is presumed that considerable work will be done this summer.

The City of Calgary, Alberta, has formally filed its application for a power supply and water storage basin,

thirty-five miles up the Elbow River. To carry out the development fully would require an expenditure of two and a half million dollars, but for a smaller sum flood control could be established immediately.

It is reported that the Canadian Pacific Railway is considering the construction of a direct outlay for the Peace River Country at a cost of from thirty to fifty million dollars.

Mr. J. A. McGillivray, Construction Engineer with the Hydro-Electric System, Winnipeg, has resigned to become Resident Engineer on Development Work for the Hollinger Gold Mines.

Williams Bros. of Oklahoma have been awarded the contract for three and a half million dollar gas pipeline from Viking to Edmonton.

TRADE NOTES

Fellowships in Highway Engineering and Highway Transport at the University of Michigan

Two of the following Fellowships will be awarded not later than September 10th, and two not later than November 1, 1923, by the Board of Regents of the University of Michigan.

The Roy D. Chapin Fellowship in Highway Transport, which is offered to provide for the investigation of an approved subject relative to Highway Transport.

The Roy D. Chapin Fellowship in Highway Engineering, which is offered to provide for the investigation of an approved subject relative to hard-surfaced roads and pavements.

Two Detroit Edison Fellowships in Highway Engineering, which are offered to provide for the investigation of approved subjects relative to moderate cost country roads.

General Conditions: Each Fellowship pays the sum of $250 with an allowance of $50 for expenses. The holders of these Fellowships do not have to pay tuition fees. A Fellow must hold a Bachelor's Degree from a college of recognized standing. He must enroll as a graduate student in Highway Engineering or Highway Transport and as a candidate for the Degree of Master of Science or Master of Science in Engineering. He must be in residence for one of the following periods: First Semester (October to February); Winter Period (December to March); Second Semester (February to June). An application for a Fellowship must include a concise statement of the candidate's educational training and engineering experience, and three references. Applications and requests for information pertaining to the twenty-five advanced courses in Highway Engineering and Highway Transport offered by the Graduate School should be sent to Professor Arthur H. Blanchard, Engineering Building, University of Michigan, Ann Arbor, Michigan.

The Bluffton-Lewisburg Stone Co., Lima, Ohio, wish to announce the purchase of the Hancock Stone Company, Findlay, Ohio, located on the Toledo & Ohio Central, Baltimore & Ohio, Lake Erie & Western, and Big Four Railroads.

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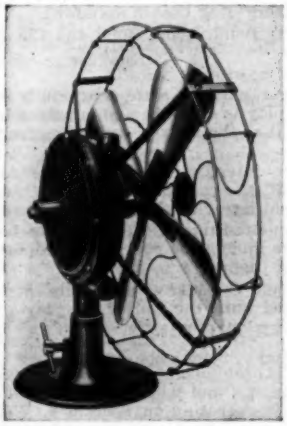

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General view of Marlboro plant of the New York Trap Rock Corporation. The two "bays" of the quarry open up to the right and left. The crusher is located under the derrick with the air cylinder, back of it and to the left is the screening and drying plant for the screenings.

One of the 50-B Bucyrus shovels loading 5-yard cars against a 75-foot face. A Cyclone drill is in operation on the top of the face.

Views of the New York Trap Rock Corporation's Operations